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# Quality Assurance of Food Raw Materials and Food Products as the Main Factor of Safety of the Consumer Market

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Additional information is available at the end of the chapter

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*"You are what you eat"*

*–Hippocrates.*

## Abstract

Ensuring food safety in the consumer market of the country, region, city is one of the priority activities to improve the quality of life of the population. To ensure the quality and safety of food products in the consumer market of the country needs consistent work. Necessary implementation of measures on formation of culture of healthy eating, food security, improving the nutritional status of the population and protection of health. Most businesses manufacture and sell products that comply with the requirements of the current normative-technical documentation, although this documentation, the experts have questions. But despite this, in the consumer market there is low-quality, non-standard and adulterated food products. One of the most pressing issues of concern to the public authorities, manufacturers, retailers, public organizations and, of course, the customers, is the prevention of falsification and counterfeiting. When exercising the state control over observance of requirements of technical regulations on food products throughout the Russian Federation the complex of measures aimed at curbing the production and trafficking of counterfeit food products. The focus is on the dairy industry, childcare, healthcare organizations, trade enterprises. And require further tightening, so as to completely solve the problem of falsification and counterfeiting is not impossible to solve. In order to prevent receipt of the consumer market of the country, the region, poor-quality food raw materials and food products necessary to intensify the work of public associations (manufacturers, distributor, wholesalers), to ensure the publicity of product quality from manufacturers, to achieve a reliable assessment of the quality of their products by manufacturers or Association.

**Keywords:** the quality and safety of food raw materials and food products, the safety of the consumer market, violations, falsification of products, counterfeit

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## 1. Introduction

In the past 30 years the overall incidence of the Russian population is constantly growing, due, on the one hand, the increase in the elderly population and better detection of diseases through new methods of diagnosis, and with another—deterioration of the health of the population and the inefficiency of the system for the prevention and treatment of diseases. Food can be the source and carrier of significant quantities dangerous to human health of toxic substances. The rapid growth of production, environmental problems, expanding the range of products and unfair attitude of the producer to what he produces has led to the fact that the quality of food has decreased significantly. These factors relate to priority socio-economic problems that generate negative trends in health status and mortality.

Unauthorized use in the process of agricultural production of medicinal products for veterinary use, intentionally introduced into an organism of productive animals, leading to contamination of food and to negative consequences for human health (appearance of infectious agents with new properties, increasing the severity and consequences of infection, antibiotic resistance, allergic reactions), requiring increased costs of their treatment, including the provision of high-tech medical care [4].

Ensuring food safety in the consumer market of the country, region, city is one of the priority activities to improve the quality of life of the population. To ensure the quality and safety of food products in the consumer market of the country requires consistent work.

## 2. Methodology

Theoretical and methodological basis of the research was the concepts and hypotheses presented in the works of domestic and foreign scientists on safety, food security, regional economy, regional consumer markets, research on the quality of goods.

The methodological substantiation of the research on the chosen topic is formed on the principles of the system approach and the general theory of systems, the theory of quality systems, the theory of logistics and trade management. In order to substantiate the propositions put forward in the study and solve these problems, methods of economic-mathematical modeling, system analysis, structural analysis, statistical, expert-analytical, sociological methods were used, which allowed revealing the essence of the issues studied, obtaining reliable results and providing sufficient justification for the estimates and conclusions contained in the study.

## 3. Results of the study

In the structure of causes of death in the Kirov region as in the whole of the Russian Federation (according to the operative data of Rosstat) still account for the bulk of diseases of the circulatory system (48.5%), neoplasms (15.7%), accidents, poisoning and traffic injuries (9.4%).

Mortality from external causes of death exceed the average value is 1.3 times, from diseases of the circulatory system and neoplasms 1.2 times. Despite a steady trend of annual decline of mortality from accidental alcohol poisoning in 2016 this figure in the region continues to exceed the national average by 3.3 times.

In the structure of mortality from external causes in the Kirov region attract the attention of high mortality rates from suicide (above the average for Russia in two times) (**Table 1**).

In dynamics in recent years, still maintains a positive downward trend in mortality for all major causes of death except for deaths from neoplasms in the last 3 years there has been a rise in mortality from this cause. In recent years the level of general morbidity with the diagnosis established for the first time has a tendency to decrease (**Table 2**). The incidence rate in 2016 below the average annual value of 3%. Compared to 2012, the year of the primary incidence of the total population of the region in 2016 decreased by 4.3% [5].

The structure of the first identified incidence of the region's population in 2015 has not changed significantly. The most common cause of primary morbidity of population of the region, as in previous years, were diseases of the respiratory system. Second place in the morbidity structure of children and adults is injury, poisoning and certain other causes external causes, and among teenagers for the first time in many years, in second place came eye disease (**Table 3**).

Analysis of the average annual rate of growth (decline) of the disease has enabled to identify classes of diseases characterized by a tendency to increase. So, in 2016, a tendency to increase (compared to 2014) are the primary indicators of child morbidity diseases of the endocrine system (1.2 times) due to, primarily, the growth of obesity among children (1.3 times), the marked increase of congenital anomalies (malformations) in children (1.2 times) [3].

The main causes of death	2012 year	2013 year	2014 year	2015 year	2016 year	Russian Federation (2016 year)
<b>Deaths from all causes:</b>	1560.3	1536.0	1513.5	1518.6	1490.1	1288.3
From some infectious and parasitic diseases	8.8	9.5	9.6	9.1	8.2	22.3
Tumors	211.0	214.3	233.2	225.7	234.7	201.6
Diseases of the circulatory system	937.5	888.2	770.3	807.5	722.4	614.1
Diseases of the respiratory system	70.6	72.1	76.4	66.1	51.5	47.1
Diseases of the digestive system	59.5	57.3	66.8	72.9	71.8	66.6
<b>External causes of death:</b>	188.6	175.1	170.0	154.6	140.2	104.8
Of them from traffic injuries	20.7	19.6	19.3	16.0	14.3	14.7
Alcohol poisoning	36.0	24.9	29.1	23.4	19.0	5.7
Suicide	37.3	38.6	36.1	33.9	31.9	15.6
Murders	12.2	12.8	10.6	9.7	9.2	7.0

**Table 1.** Mortality of the population of the Kirov region by main causes of death in 2012–2016 g (per 100,000 population) [4].

Indicators	2012 year	2013 year	2014 year	2015 year	2016 year	Russian Federation (2016 year)
All diseases from them:	788.5	767.2	788.6	755.0	754.8	778.2
Certain infectious and parasitic	35.1	33.7	33.3	33.3	28.3	28.1
Tumors	8.9	8.8	9.5	9.9	9.9	11.4
Blood and blood-forming organs and certain disorders involving the immune mechanism	4.6	4.7	4.6	4.5	5.3	4.7
Endocrine, nutritional and metabolic disorders	10.1	11.2	10.4	10.7	17.4	13.3
Nervous system	12.0	12.1	12.3	11.0	11.3	15.4
Eye and adnexa	31.5	30.9	31.9	31.9	32.0	33.3
Ear and mastoid	27.0	27.7	26.5	24.5	25.3	26.6
Circulatory	23.2	22.5	31.2	26.3	29.8	31.2
Respiratory	372.6	349.7	372.7	349.0	349.8	337.9
Digestive	18.4	17.3	16.8	18.6	18.0	35.3
Skin and subcutaneous tissue	40.6	42.9	44.1	41.2	36.8	44.0
Musculoskeletal system and connective tissue	28.7	28.0	24.8	23.2	25	30.1
Genitourinary system	33.6	33.3	34.0	35.1	32.6	46.4
Congenital anomalies (malformations), deformations and chromosomal abnormalities	1.0	1.1	0.8	0.8	1.0	2.0
Injury, poisoning and certain other consequences of external causes	99.8	101.9	97.0	98.5	95.4	90.4

**Table 2.** Incidence of the Kirov region population by main classes of diseases (patients registered with the diagnosis set for the first time, per 1000 of the population) [4].

Rank	Kids	Teens	Adults
First place	Diseases of the respiratory system was 72.4%	Diseases of the respiratory system is 57.5%	Diseases of the respiratory system–25.4%
Second place	Injury, poisoning and certain other consequences of external causes is 5.3%	diseases of the eye and adnexa–7.5%	Injuries, poisoning and some other consequences of external causes by 18.7%
Third place	Infectious, parasitic diseases–4.0%	Injuries, poisoning and some other consequences of external causes 6.3%	Of illnesses of system of blood circulation–7.4%
Fourth place	diseases of the eye and adnexa–2.6%	Of the disease customizing system is 5.1%	Diseases of the genitourinary system–7.0%
Fifth place	Diseases of the skin and subcutaneous tissue at 2.5%	Diseases of the skin and subcutaneous tissue is 4.8%	Diseases of the skin and subcutaneous tissue–6.6%
Sixth place	Sixth place diseases of the ear and mastoid–2.4%	Diseases of the genitourinary system and 3.7%	Diseases of the eye and adnexa–5.3%

**Table 3.** The structure of primary morbidity of the population of the Kirov region in 2016 [4].

In the adult population is significant statistically significant increased incidence in 2015 compared to previous year is observed for diseases of the endocrine system (1.8 times), including obesity in 2.4 times, thyroid disease 1.4 times, for diseases of the blood (1.6-fold), diseases of the circulatory system (19.5%).

Among the sanitary-hygienic risk factors of human health, the main contribution of complex chemical load due to the contamination of drinking water, air, food, soil.

Ensuring food safety in the consumer market of the country, region, city is one of the priority activities to improve the quality of life of the population. To ensure the quality and safety of food products in the consumer market of the country needs consistent work.

Necessary implementation of measures on formation of culture of healthy eating, food security, improving the nutritional status of the population and protection of health.

Most businesses manufacture and sell products that comply with the requirements of the current normative-technical documentation, although this documentation, the experts have questions. But despite this, in the consumer market there is low-quality, non-standard and adulterated food products.

Food security of the population is one of the most important socio-economic tasks, as the degree of satisfaction of food affects human health, their well-being. The development of the food market depends on the state of agro-industrial complex as the main source of formation of resource base in the trading sector, the solvency of the buyers and consumer demand.

The food market is adversely affected by the absence of a developed market infrastructure, high cost levels in production, discrepancy of products to the required standards. In General, the food market of Russia and Kirov region in particular in recent years there has been positive dynamics of development, his state was stable in almost all types of products. The food market area was characterized by saturation, absence of physical scarcity, high competition on the market of food products, increasing demand, growth in retail trade turnover [2].

The concept of "food security" in relation to the regions is not sufficiently well-established in contrast to the definitions used at the country level and opened in the food security Doctrine of the Russian Federation. According to the Doctrine of "food safety of Russia—is the state of the economy, which ensures food independence of the Russian Federation, is guaranteed physical and economic accessibility for every citizen of the country of food products that meet the requirements of the legislation of the Russian Federation on technical regulation, in amounts not less than the rational norms of food consumption necessary for an active and healthy lifestyle."

Ensuring the safety of food raw materials and food products is one of the main areas that determine the health of the population and its genetic conservation. With foods in the human body comes 40–50% of harmful substances, water 20–40. In connection with the above, you must submit analysis of the incidence of one of the regions of the Russian Federation, namely in Kirov region. Monitoring of drinking water quality identified areas of risk where the population uses drinking water that does not meet sanitary requirements on sanitary-to-chemical indicators. Prolonged use of drinking water with high levels of contamination by



chemicals of natural and anthropogenic character could be one of the reasons for the development of various non-communicable diseases in the population [6].

The toxic effect of nitrates is associated with restoring them to nitrites, ammonia, hydroxylamine, under the influence of microorganisms and enzymes of the digestive tract. It is the nitrites may have an adverse effect on people, as a direct (through the formation of methemoglobin) and indirect (through synthesis of carcinogenic compounds–nitrosamines).

Priority contaminants of food products on the territory of the Kirov region are nitrate, unsatisfactory research results, the contents of which are recorded ieoeie in fruits and vegetables.

You must also submit an analysis of officially identified substandard goods and counterfeit in Russia (**Table 4**).

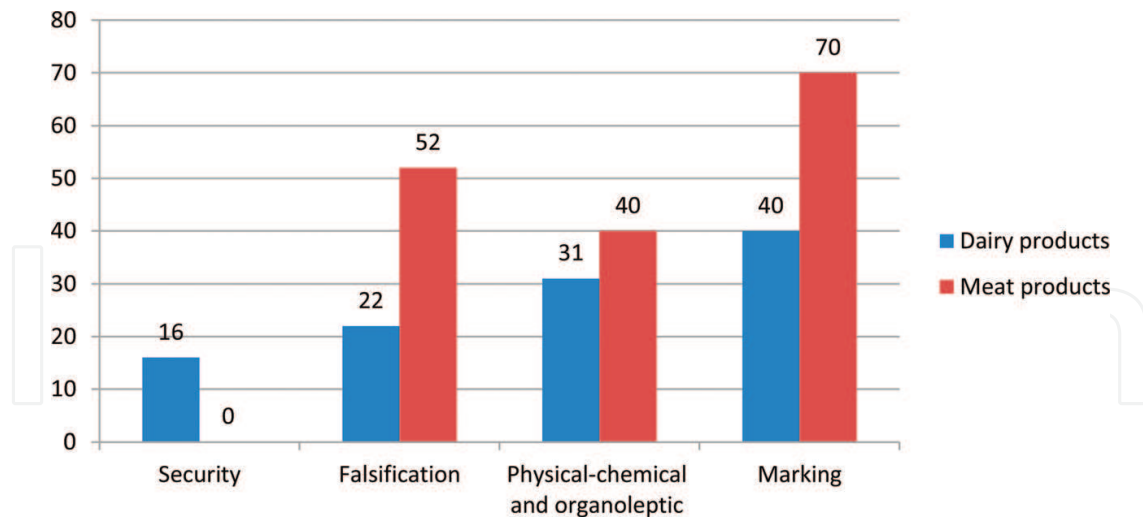
In General, it can be noted that the level of quality increases according to official data, but still there are cases of detecting substandard, counterfeit products (**Figure 1**). According to a study by the Russian Institute of consumer tests (RIPI) food held in 2016 identified the following violations [9].

Results of the study of food products in 2016 are as follows. Does not meet safety requirements:

- 48% of vegetable production;
- 38% of fish products;

Food supply	2013 year		2014 year		2015 year		2016 year	
	Domestic	Imported	Domestic	Imported	Domestic	Imported	Domestic	Imported
Meat and poultry	13	6	2	4	5	3	3	3
Poultry meat	4	10	3	8	7	2	3	4
Sausage goods	2	0	1	1	3	2	2	1
Production fish food commodity (without fish canned food)	6	3	4	18	8	19	2	1
Whole milk products	1	3	4	2	6	3	1	3
Pasta	0	0	1	0	1	0	0	10
Cereal	1	0	1	11	1	1	1	3
Flour	2	0	0	0	1	0	1	0
Pastry	4	27	2	25	4	6	2	1
Butter	2	0	4	2	4	0	4	1
Vegetable oil	0	0	0	2	0	0	0	0
Production of margarine and mayonnaise	1	0	3	2	2	0	0	2
Cheeses	1	4	3	4	2	5	2	1

**Table 4.** Quality of goods received by the consumer market, Russian Federation, percentage of the number of samples [10].

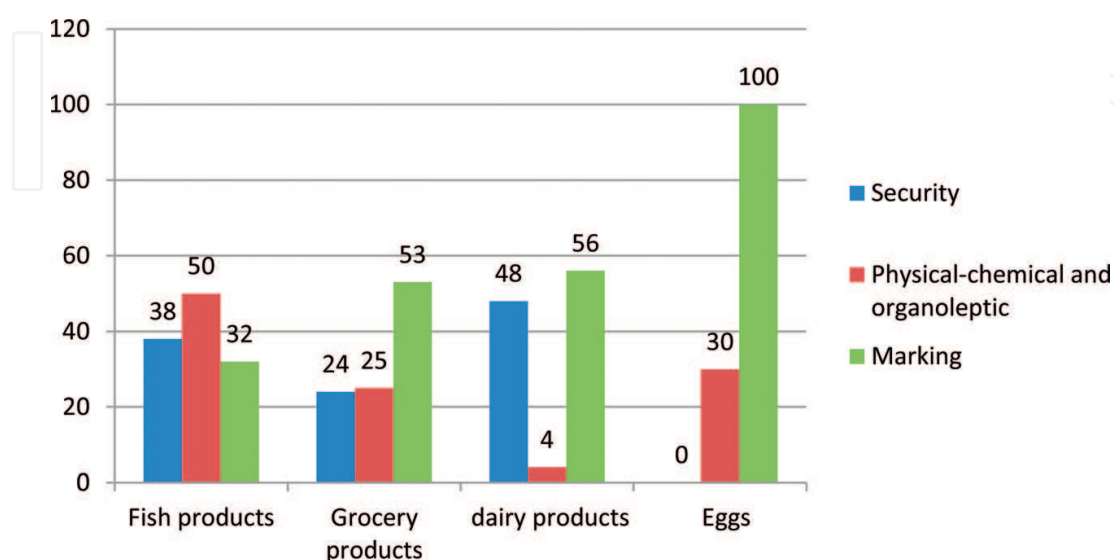


**Figure 1.** Chart of violations in a separate food group in 2016 (%).

- 24% of groceries;
- 16% of dairy products [10].

A high percentage of dangerous vegetable products is due to the presence in the fresh vegetables of residual amounts of pesticides that are not regulated to mandatory testing (only 2 pesticides are to be checked when declaring the product) (**Figure 2**). Is falsified: 52% of meat products; 22% of dairy products.

The specificity of the revealed falsification of meat products is due to the fact that the actual composition of the products differs from the one declared on the packaging (replacement of raw materials). Also, manufacturers use additives to improve the final product, using poor quality raw materials. Histological analysis of the composition of the product makes it possible to identify the presence of undeclared components and/or the absence of declared ones. When using



**Figure 2.** Chart of violations in a separate food group in 2016 (%).



low-grade meat or raw materials with an increased moisture content (frozen meat), appropriate water absorbers or water-retaining additives (starch, flour, carrageenan, etc.) are used that transfer excess moisture to a colloidal or emulsion state. Another option of falsification is the addition of artificial flavors, dyes and other food additives, including preservatives.

Among the meat falsifications there are traditional leaders. These are such popular products as sausage “Doctor’s” (68%) and sausages (50%), produced in accordance with GOST, and pelmeni (64%).

In the category of dairy products, the proportion of counterfeit products is 22%, excluding the RIPI studies for three groups of dairy products: packaged curd, cream and ghee. In them, the results of laboratory analyzes do not allow to make an unambiguous conclusion that the product is not falsified; **Table 5**).

Food safety research conducted in 2016 revealed the following:

- The situation is extremely alarming in the vegetable market—almost every second sample is dangerous (48%), while the share of dangerous fresh vegetables and melons is even higher (60%).
- As in previous years, the safety of fish products is a concern—every third sample is dangerous (38%).
- The share of dangerous dairy products was at least 16%. Compared to 2015, it decreased by more than a third, but it should be noted that safety indicators in dairy products were tested in less than half of the studies.
- The share of dangerous groceries was not less than 24% (safety indicators were checked in less than half the studies).

Research has revealed a large share of falsified products: every second meat product (52%) is falsified, and at least one in five milk products (22%). It should be noted that the existing methods of quality control of dairy products do not allow to unambiguously and reliably qualify products as falsified. According to physicochemical indicators and organoleptic, the share of products with violations of technical regulations is as follows: fish—50%, meat products—40%, dairy—31%, bread—21%. With respect to labeling, it can be noted that consumers’ rights to complete and reliable information the product is violated systematically.

Falsifiers in dairy products	Does not comply with the physicochemical parameters and organoleptics	Share of violations on marking
Sour cream–33%; Butter–30%; Cottage cheese–22%; Milk–21%; Ice cream plombir–20%; Condensed milk–17%; Cheese–4%.	50% of fish products; 40% of meat products; 31% of dairy products; 30% of eggs; 25% of groceries.	100%–eggs 70%–meat products 56%–fresh vegetables 53%–groceries 40%–dairy products 32%–fish products

**Table 5.** Data on violations by groups.

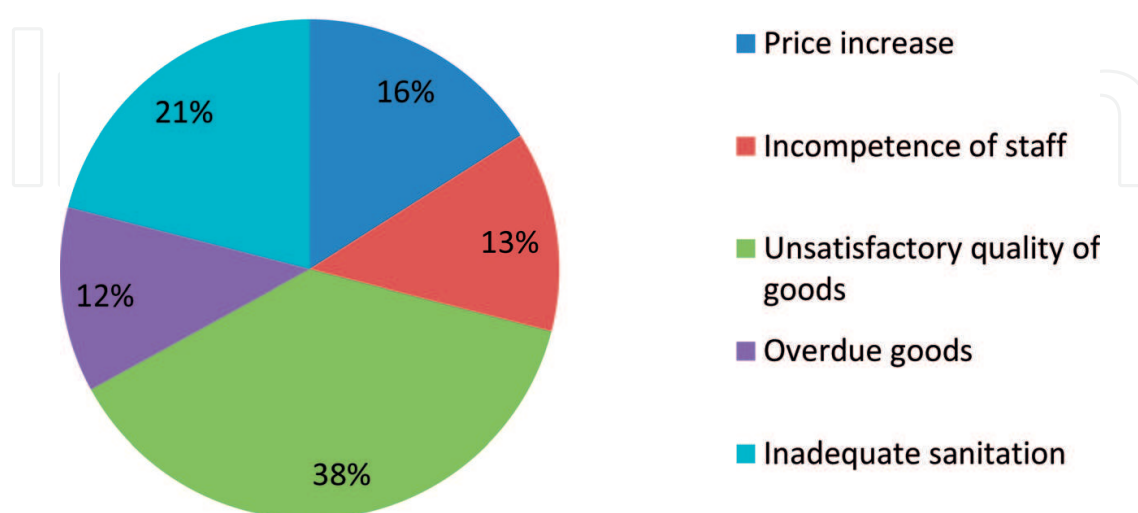
The revealed infringements (on safety, falsification and marking of products) testify to non-compliance with the requirements of the technical regulations of the Customs Union, the RF Law “On Protection of Consumer Rights” and other legislative acts [7].

It is also necessary to present the experience of identifying falsifications and substandard products in the Kirov region in 2017. The facts of turnover of meat and meat products have been established with violation of storage conditions, sale of meat without the presence of safety documents, lack of necessary labeling for meat products, inadequate sanitary maintenance of the territory, violation of personal hygiene and disinfection regulations, lack of organization and conduct of industrial laboratory control. In the course of inspections, 52 batches of meat products were rejected and withdrawn from sale. Similar violations have been identified for fruits and vegetables, cape and fish and other products. For example, in the framework of the state control of the quality and safety of food raw materials and food products on the territory of the Kirov region, samples of fat and oil products were selected. The indicated products for the fatty acid composition of milk fat and the ratio of the mass fractions of methyl esters of fatty acids in milk fat do not meet the requirements. This indicates the falsification of the fatty phase of the oil with fats of non-dairy origin.

Low-quality level of quality is also noted by consumers of products. The survey conducted by the author in 2016 revealed the following problems of retail chains in the Kirov region, according to consumers (**Figure 3**).

Thus, among the main problems typical for the lion’s share of the Kirov retailers, respondents most often mentioned violations of quality standards (38%), unsatisfactory sanitary condition (21%) and a rise in prices for goods (16%). In aggregate, more than half of the respondents note the importance of the quality factor and their dissatisfaction with the goods and services sold by retail chains.

### TOP - 5 problem zones of food networks



**Figure 3.** The opinion of the Kirov consumers about the problems in retail chains.

Speaking about food safety, it is necessary first of all to raise the issue of environmentally friendly raw materials for their production. This problem must be solved both at the state level and in the regions. Until recently, restrictions on the content of harmful substances were shown only to the final product—food products—and did not apply to the raw materials from which they were produced [8].

The unsatisfactory quality of food products, namely, the high content of nitrates, pesticides, mycotoxins, and heavy metals in them not only leads to a decrease in their consumer properties (the content of vitamins and essential amino acids decreases, the composition of macro- and microelements changes, and the organoleptic properties also decrease products), but, more importantly, to negative effects on the human body as a whole. Thus, the consumption of food products with a high content of nitrates and nitrites leads to an increase in the content of methemoglobin in the blood, which leads to a decrease in the supply of oxygen to the organs and tissues of the body and subsequent disruption of the functions of all body systems, including the activity of the central nervous and cardiovascular systems [7].

Accumulation in the body of pesticides leads to the development of severe variants of gastroenterological diseases with frequent prolonged exacerbations associated with damage to the mucous membrane of the gastrointestinal tract, as well as the concomitant development of neurovegetative, endocrine, immunological, dysbiotic and functional cardiovascular disorders. And the accumulation in the human body of heavy metals and their salts, leads to damage to absolutely all systems of the body, including the central nervous, cardiovascular, respiratory, digestive and endocrine systems, as well as to disorders of the musculoskeletal system.

The unsatisfactory situation in the food market of the Russian Federation and the Kirov region in particular can be explained by the following factors:

1. Control over the process of production and sale of food products is withdrawn from the sphere of state regulation and left to the discretion of producers. Also, the safety of food products in Russia is regulated by about 7000 standard documents, but none of them affects the quality of products.
2. Many Russian food industry enterprises do not always create conditions in which product safety is possible. It is practically impossible to realize, in the absence of a modern system of quality control and safety of food raw materials and finished types of food products.
3. Another significant problem is that food products are often perishable, as a result of physiological processes and microbiological effects.
4. It should also be noted that the retail network is seriously affecting the level of product quality, and for the worse. For example, manufacturers are forced to increase the shelf life, reduce prices for products, all this is achieved only through deterioration in quality.

Undoubtedly, we need a new certification system for compliance with ISO 22000: 2005 (GOST R ISO 22000–2007) “Food safety management system. Requirements for the organization of the chain of production and supply.” But this measure will not solve the problem. A national quality system is required. Currently, a national food quality management system is being

developed. Rosselkhoznadzor and Roskazhestvo should coordinate actions aimed at dynamically increasing the level of quality of domestic products [3].

The system of traceability of raw materials and commodity batches created by Rosselkhoznadzor allows to control the whole chain of production and distribution of agricultural raw materials and food products, as well as to identify and suppress risks associated with their inferiority and falsification. Rosselkhoznadzor will inform Roskazhestvo about the state of safety of food products sold in Russia. In turn, Roskazhestvo will provide the Rosselkhoznadzor with the results of its own fan research. The tracking system will come into effect already this winter. The new system of interaction will allow: to quickly identify risks of contamination and falsification of food products; make the turnover of products in the domestic market more transparent; ensure timely detection and withdrawal from the trading network of a low-quality batch of goods.

But despite the positive developments, it should be noted that the system of regulatory and legal regulation of relations in the field of quality assurance developed in the Russian Federation is based on the norms of the World Trade Organization and the Eurasian Economic Union.

Imperfection of legal and organizational mechanisms with respect to the quality of food products leads to the appearance of low-quality foreign goods and frank falsifications on the Russian market [5].

Consumption of food products with low consumer properties is the reason for the decline in the quality of life and the development of a number of diseases of the population, including due to unreasonably high caloric content of food, reduced nutritional value, excessive intake of saturated fats, micronutrient deficiency and dietary fiber. What is further exacerbated by the lack of a unified information system for quality control of food products throughout all processes of food production and circulation, to track the use of medicines for veterinary use and plant protection products, to identify the organizations responsible for each stage in the chain of its production and circulation.

The problem of ensuring the quality of food products is also the almost complete absence in the Russian Federation of the production of food ingredients and substances (vitamins, amino acids, food additives, enzyme preparations, biologically active substances, starter and probiotic microorganisms, prebiotic substances, etc.).

The existing system of methods for controlling both food additives and food additives in the composition of food products requires improvement.

In order to improve the quality and safety of food products, a number of regulatory documents have been adopted in the Russian Federation, such as the "Food Security Doctrine of the Russian Federation" and "The Strategy for Improving the Quality of Food Products until 2030". The adoption of the "Food Security Doctrine" is aimed at reliable provision of the country's population with safe agricultural products, fish and other products from aquatic biological resources and foodstuffs, which in turn should lead to an improvement in the quality of life of Russian citizens by guaranteeing high standards of livelihood [11].

Within the framework of the "Strategy for improving the quality of food products until 2030" adopted on July 4, 2016, it is planned to improve the regulatory framework and product

monitoring systems. A unified information system should be created, through which consumers will be able to obtain data on the composition of a product and its manufacturer. The strategy is aimed at providing adequate nutrition, preventing diseases, increasing the duration and improving the quality of life of the population, stimulating the development of production and circulation in the food market of proper quality.

Within the framework of solving the problem of the quality of consumer goods and raw materials, it is necessary to solve a number:

- Improvement and development of the regulatory framework in the field of food quality, including legal aspects related to effective compensation mechanisms for the protection of consumers' rights;
- improving and developing the methodological basis for assessing the compliance of food quality indicators;
- ensuring the monitoring of the quality of food products;
- Improvement of state regulation in the field of food quality, including in terms of ensuring state control (supervision) and applying administrative penalties for non-compliance by the manufacturer (executor, seller, a person performing the functions of a foreign manufacturer) with food quality requirements;
- creation of a single information system for the traceability of food products;
- development and implementation of a quality management system for food products;
- creation of incentive mechanisms for producers to produce food products that meet the quality criteria and principles of healthy eating;
- creation of conditions for the production of new generation food products with specified quality characteristics;
- the revival of the production of food ingredients in the Russian Federation;
- actualization of the current standards for the maintenance of food additives, flavors, biologically active substances, remnants of medicinal products for veterinary use and plant protection products in food products;
- priority development of scientific research in the field of nutrition of the population, including in the field of prevention of the most common non-communicable diseases and development of production technologies aimed at improving the quality of food products;
- Promoting the principles of healthy eating;
- Close work with retail chains to improve the quality of food at the federal and regional levels, using a policy of "national" and "regional" protectionism.

The strategy is the basis for the formation of a national food quality management system [9]. Thus, the need to improve the quality, as well as the development of functional foods that can become part of the daily diet, and can have a positive impact in preventing the development of



various diseases of all systems of the human body and reduce the rate of premature aging of the organism due to external factors is topical. This task becomes especially important in the tense ecological situation in the Sverdlovsk region, taking into account the ever increasing negative impact of such sanitary and hygienic risk factors as chemical, biological and radiation dose loads on public health.

#### 4. The conclusion

Based on the analysis, the following conclusions can be drawn. Previous studies did not have a systematic analysis of the relationship between the health of the population of the region and the nutrition of the population. In the structure of the causes of death in the Kirov region, the major part is still the diseases of the circulatory system, neoplasms, accidents, poisoning and transport injuries.

In the adult population, there is a significant increase in the incidence rate in 2016 for endocrine system diseases, including obesity, thyroid disease, blood diseases, circulatory system diseases. Among the sanitary and hygienic risk factors of health disorders, the main contribution is made by the complex chemical load due to contamination of drinking water, atmospheric air, food, soil. It is necessary to implement measures to create a healthy diet, ensure food security, improve the quality of nutrition of the population and protect its health.

Food provision of the population is one of the most important socio-economic tasks, since the degree of satisfaction with food products depends on a person's health and well-being.

Currently, does not meet the safety requirements: 48% of vegetable products, 38% of fish products, 24% of groceries, 16% of dairy products. Research has revealed a large share of falsified products: every second meat product (52%) is falsified, and at least one in five milk products (22%). According to physicochemical indicators and organoleptic, the share of products with violations of technical regulations is as follows: fish—50%, meat products—40%, dairy—31%, bread—21%. With respect to labeling, it can be noted that consumers' rights to complete and reliable information the product is violated systematically.

Among the main problems typical for the lion's share of the Kirov retailers, respondents most often mentioned breaches of quality standards (38%), unsatisfactory sanitary condition (21%) and a rise in prices for goods (16%).

With the purpose of solving the problem of the quality of consumer goods and raw materials, it is necessary to solve a number of tasks: improving and developing the regulatory framework in the field of food quality, improving and developing the methodological base, ensuring food quality monitoring, improving state regulation in the field of food quality, actualization of existing standards for the content of food additives in food, priority development of scientific research in the nutrition of the population, promoting the principles of healthy eating, working closely with retailers. These measures will improve the quality of products and consequently increase the level of public health and reduce the level of mortality.



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